

## WHAT IS CLAIMED IS:

1. An organic light emitting device comprising:
  - an anode;
  - an emissive region; and
  - a cathode,wherein the emissive region comprises:
  - a first emissive layer, comprising a first host material and a first emissive material, and
  - a second emissive layer in physical contact with the first emissive layer and comprising a second host material and a second emissive material,and wherein:
  - the first emissive layer is nearer to the anode than the second emissive layer, and
  - at least one of the first emissive material or the second emissive material is a phosphorescent emissive material.
2. The organic light emitting device of claim 1, wherein the contact between the first emissive layer and the second emissive layer provides an electron injection barrier, a hole injection barrier, or both.
3. The organic light emitting device of claim 2, wherein the contact between the first emissive layer and the second emissive layer provides an electron injection barrier.
4. The organic light emitting device of claim 3, wherein the first emissive layer has a lower electron mobility than the second emissive layer.
5. The organic light emitting device of claim 2, wherein the contact between the first emissive layer and the second emissive layer provides a hole injection barrier.
6. The organic light emitting device of claim 5, wherein the second emissive layer has a lower hole mobility than the first emissive layer.

7. The organic light emitting device of claim 1, wherein the device further comprises a blocking layer.
8. The organic light emitting device of claim 1, wherein the emissive region further comprises an additional emissive layer.
9. The organic light emitting device of claim 1, wherein the first host material is mCP and the second host material is TPBi.
10. The organic light emitting device of claim 1, wherein the first emissive material and the second emissive material are phosphorescent emissive materials.
11. The organic light emitting device of claim 1, wherein the cathode is in physical contact with the emissive region.
12. The organic light emitting device of claim 1, wherein the device is capable of an external quantum efficiency of at least about 10%.
13. The organic light emitting device of claim 8, wherein the additional emissive region is disposed between the first emissive region and the anode.
14. The organic light emitting device of claim 13, wherein the first emissive layer comprises  $\text{Ir}(\text{F}_2\text{CNppy})_2(\text{pic})$  in mCP, the second layer comprises  $\text{Ir}(\text{pq})_2(\text{acac})$ , and the additional emissive layer comprises  $\text{Ir}(\text{Ph-ppy})_3$  in mCP.
15. An organic light emitting device comprising:  
an emissive region disposed between and electrically connected to an anode and a cathode,  
wherein the emissive region comprises:  
a first emissive layer, comprising a first host material and a first emissive material, and  
a second emissive layer in physical contact with the first emissive layer and comprising a

second host material and a second emissive material,  
wherein:  
the contact between the first emissive layer and the second emissive layer provides an  
electron injection barrier, a hole injection barrier, or both,  
the first emissive layer is nearer to the anode than the second emissive layer,  
at least one of the first emissive material or the second emissive material is a  
phosphorescent emissive material, and  
wherein the device emits with CIE x,y-coordinates that vary less than about 0.04 over the  
luminance range of about 1000 cd/m<sup>2</sup> to about 20,000 cd/m<sup>2</sup>.

16. The organic light emitting device of claim 15, wherein the contact between the first emissive layer and the second emissive layer provides an electron injection barrier.
17. The organic light emitting device of claim 16, wherein the first emissive layer has a higher LUMO than the second emissive layer.
18. The organic light emitting device of claim 16, wherein the first emissive layer has a lower electron mobility than the second emissive layer.
19. The organic light emitting device of claim 15, wherein the contact between the first emissive layer and the second emissive layer provides a hole injection barrier.
20. The organic light emitting device of claim 19, wherein the second emissive layer has a lower HOMO than the first emissive layer.
21. The organic light emitting device of claim 16, wherein the second emissive layer has a lower hole mobility than the first emissive layer.
22. The organic light emitting device of claim 15, wherein the emissive region further comprises an additional emissive layer.

23. The organic light emitting device of claim 15, wherein the device emits with CIE x,y-coordinates that vary less than about 0.02 over the luminance range of about 1000 cd/m<sup>2</sup> to about 20,000 cd/m<sup>2</sup>.
24. The organic light emitting device of claim 23, wherein the device emits with CIE x,y-coordinates that vary less than about 0.01 over the luminance range of about 1000 cd/m<sup>2</sup> to about 20,000 cd/m<sup>2</sup>.
25. The organic light emitting device of claim 15, wherein the device emits with CIE x,y-coordinates that vary less than about 0.04 over the luminance range of about 50 cd/m<sup>2</sup> to about 50,000 cd/m<sup>2</sup>.
26. The organic light emitting device of claim 25, wherein the device emits with CIE x,y-coordinates that vary less than about 0.02 over the luminance range of about 50 cd/m<sup>2</sup> to about 50,000 cd/m<sup>2</sup>.
27. The organic light emitting device of claim 26, wherein the device emits with CIE x,y-coordinates that vary less than about 0.01 over the luminance range of about 50 cd/m<sup>2</sup> to about 50,000 cd/m<sup>2</sup>.
28. The organic light emitting device of claim 15, wherein the first emissive material and the second emissive material are phosphorescent emissive materials.
29. The organic light emitting device of claim 15, wherein the first host material is a high energy gap material and the first emissive material is a phosphorescent blue-emitting material.
30. The organic light emitting device of claim 15, wherein the second host material is a high energy gap material and the second emissive material is a phosphorescent blue-emitting material.

31. The organic light emitting device of claim 15, wherein the first host material is mCP and the second host material is CBP.
32. An organic light emitting device comprising an emissive region disposed between and electrically connected to an anode and a cathode, wherein the emissive region comprises: a first emissive layer, comprising a first host material and a first emissive material, and a second emissive layer comprising a second host material and a second emissive material, and a blocking layer between and in contact with the first emissive layer and the second emissive layer, wherein:  
the blocking layer is an electron blocking layer or a hole blocking layer, and  
at least one of the first emissive material or the second emissive material is a phosphorescent emissive material.
33. The organic light emitting device of claim 32, wherein the blocking layer is an electron blocking layer.
34. The organic light emitting device of claim 32, wherein the blocking layer is a hole blocking layer.
35. The organic light emitting device of claim 32, wherein the second host material is a high energy gap material and the second emissive material is a phosphorescent blue-emitting material.